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Recasting Intellectual Property in Light of the U.N. Sustainable Development Goals: Toward Global Knowledge Governance

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RECASTING INTELLECTUAL PROPERTY IN LIGHT OF THE U.N. SUSTAINABLE DEVELOPMENT GOALS: TOWARD GLOBAL KNOWLEDGE GOVERNANCE

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I. INTRODUCTION: RECONCEPTUALIZING INTELLECTUAL PROPERTY AND DEVELOPMENT

This essay examines the current state of the on-going relationship of intellectual property (IP) and development. Drawing on selected

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case studies from a recently published book on partnerships for development,¹ it describes a significant shift in how IP informs development. This shift is due in part to the United Nations (U.N.) Sustainable Development Goals (SDGs), adopted in 2015 as the key means of implementing the U.N.'s 2030 Sustainable Development Agenda (2030 Agenda).² The SDGs challenge the assumption that development occurs as an inevitable and evenly-distributed outcome of innovation incentivized by IP.³ Instead, IP could be (and this essay argues, it ought to be) viewed as an essential and pervasive element throughout all of the SDGs, not only critical to their success, but also guided by their core distributive commitments.

This essay suggests that this pervasive approach of IP and development can be accomplished through a recasting of IP regulation as “global *knowledge governance*, whether by encouraging innovation, building innovation capacity, engaging in technology transfer, or otherwise ensuring dissemination and diffusion of the results of innovation across borders.”⁴ Its basic premise is that IP and development can, and should be, re-conceptualized together as a single field consisting of all ways of ordering and managing knowledge systems, whether by precept or practice. This approach suggests a different ordering of domains, rather than the more traditional and often needlessly narrow and siloed schema of legal frameworks involving regulation of IP primarily through copyright, patent, and trademark laws (sometimes referred to as the Big Three). It also accounts for the SDGs’ more comprehensive approach towards development that requires harnessing the power of innovation and technology for multiple purposes and for the benefit of all nations, whether designated as developed or developing.

A recasting of IP into global knowledge governance also results in

1. THE CAMBRIDGE HANDBOOK ON PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE, AND SUSTAINABLE DEVELOPMENT (Margaret Chon et al. eds., 2018) [hereinafter PPPs].

2. G.A. Res. 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development (Oct. 21, 2015) [hereinafter 2030 Agenda].

3. See *id.* ¶¶ 2, 41.

4. Margaret Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs 3, 5–6 (Margaret Chon et al. eds., 2018).

the logical inclusion of other significant domains of knowledge that may operate throughout diverse social and economic systems.⁵ By moving beyond the so-called Big Three and other major public law categories, global knowledge governance acknowledges the roles of tacit knowledge; traditional knowledge; knowledge generated from transnational governance networks; and other forms of knowledge shaped by pluralistic legal systems including social norms.⁶ Viewing IP in a more capacious way emphasizes the major social welfare goals of ordering knowledge for many forms of development, whether the specific development goal is promoting access to climate change technologies or educational materials.

This re-orientation can also link more explicitly IP's social welfare goals to development's social justice goals. A social justice critique of the liberal ideals of social welfare points to either redistributive or enabling views of justice.⁷ These views contrast with the liberty-enhancing views often dominant in progressive versions of IP, in which market-driven IP mechanisms "naturally" lead to economic development and social freedoms.⁸ Social justice based views of the function of IP in a good life⁹ can provide additional fulcrums for realigning the field toward broader questions about the nature of knowledge creation, production, distribution, and usage in knowledge systems on the global scale.

Regardless of development, globalization's on-going impact on IP also forcefully suggests that it is past time to reframe IP regulation as

5. See Margaret Chon, *IP and Critical Theories*, in HANDBOOK ON INTELLECTUAL PROPERTY RESEARCH (Irene Calboli & Lilla Montagnani eds, forthcoming) (manuscript at 3-4, 9-10).

6. See, e.g., *id.*

7. Jeremy de Beer, Presentation at the American University International Law Review Symposium on Intellectual Property and Development (Sept. 28, 2018); Chon, *supra* note 5, at 3-4; see, e.g., Haochen Sun, *The Diversity of Interests in the Trademark Protection of Luxury Brands*, in DIVERSITY IN INTELLECTUAL PROPERTY: IDENTITIES, INTERESTS, AND INTERSECTIONS 426, 427 (Irene Calboli & Srividhya Ragavan eds., 2015).

8. Chon, *supra* note 5, at 3-4.

9. See MADHAVI SUNDER, FROM GOODS TO A GOOD LIFE: INTELLECTUAL PROPERTY AND GLOBAL JUSTICE 100-04 (2012); Madhavi Sunder, *Bollywood/Hollywood*, 12 THEORETICAL INQUIRIES L. 275, 279 (2011).

global knowledge governance.¹⁰ Increasingly insistent cross-border flows of information act as powerful disruptors of the territoriality of the traditional IP doctrinal categories,¹¹ which are largely structured internationally through formal trade agreements among state actors.¹² Attempts by these actors to harmonize disparate doctrinal rules of IP highlight the cultural specificity of knowledge governance, while providing partial, dynamic comparative frames of analysis. Simultaneously, the insistent locality of many forms of knowledge production, and distribution raise questions about the propriety of universal rules structures.¹³ The growing pervasiveness of transnational governance networks, which span across borders through private ordering rather than public law, also raises many questions.¹⁴ Much international IP scholarship focuses on the well-documented dialogical interplay between global harmonization of and local resistance to public law norms.¹⁵ By contrast, global knowledge governance directs us to examine recurring features of knowledge systems across regions rather than focusing solely on domestic doctrinal and policy concerns.¹⁶

Adopted by U.N. General Assembly resolution in 2015, the SDGs encompass a much broader and certainly much more detailed set of activities related to sustainable development than the previous Millennium Development Goals (MDGs) that were in effect from 2000-2015.¹⁷ Unlike their predecessor MDGs, which were formed

10. SUNDER, *supra* note 9, at 293.

11. *See id.* at 280.

12. *See, e.g.,* Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 1869 U.N.T.S. 299, 33 I.L.M. 1197.

13. *See* SUNDER, *supra* note 9, at 181–82.

14. Margaret Chon, *Trademark Goodwill as a Public Good: Brands and Innovations in Corporate Social Responsibility*, 21 LEWIS & CLARK L. REV. 277, 297 (2017).

15. *See generally* SUNDER, *supra* note 9, at 181–82 (maintaining that the TRIPS agreement's one-size-fits-all approach to intellectual property deviated from the previous approach so that countries may no longer "develop intellectual property rules conducive to their particular developmental needs").

16. *Id.*

17. *See generally* Goal 8: *Develop a Global Partnership for Development*, U.N., <http://www.un.org/millenniumgoals/global.shtml> (last accessed Apr. 17, 2019) (providing that the UN is working to build upon the "momentum generated by the MDGs and carry on with an ambitious post-2015 development agenda").

rather quickly within a relatively closed process,¹⁸ the current SDGs are the result of extensive input:

Throughout 2012 and 2013, [in which] the United Nations facilitated what seemed like the first exercise in global participatory democracy, organizing fifty-plus country consultations, multiple global thematic consultations, and a worldwide online citizen survey—all of which were accompanied by numerous parallel NGO, expert, and state initiatives. Likewise, the General Assembly took seriously its deliberative task. . . . The open nature of the process also permitted civil society organizations, UN agencies, and private corporations to engage at multiple points and stages in the drafting. A staggering range of diverse interests were promoted and defended by these actors.¹⁹

The relatively participatory and open nature of this deliberative process has several consequences. One of these is the inclusion of international human rights measures—including the right to development—a significant evolution from the previous MDGs.²⁰ Another is the disruption of the MDGs' binary distinction between developed and developing countries—the newer SDGs are intended to apply to all countries regardless of their level of development.²¹

18. See Ved P. Nanda, *The Journey from the Millennium Development Goals to the Sustainable Development Goals*, 44 DENV. J. INT'L L. & POL'Y 389, 398 (2016).

19. Malcolm Langford, *Lost in Transformation? The Politics of the Sustainable Development Goals*, 30 ETHICS & INT'L AFF. 167, 170–71 (2016); see Norichika Kanie et al., *Introduction: Global Governance Through Goal Setting*, in GOVERNING THROUGH GOALS: SUSTAINABLE DEVELOPMENT GOALS AS GOVERNANCE INNOVATION 1, 16–17 (Norichika Kanie & Frank Biermann eds., 2017).

20. *Human Rights and the 2030 Agenda for Sustainable Development*, U.N. OFFICE OF THE HIGH COMM'R FOR HUMAN RIGHTS, <https://www.ohchr.org/en/issues/SDGS/pages/the2030agenda.aspx> (last accessed Apr. 17, 2019); *Sustainable Development Goals*, U.N. OFFICE OF THE HIGH COMM'R FOR HUMAN RIGHTS, https://www.ohchr.org/Documents/Publications/Session5_OHCHR_SDG_HR_Table.pdf (last accessed Apr. 17, 2019). According to a recent observer, “the SDGs, are guided by the Charter of the United Nations and international law; they are grounded particularly in the Universal Declaration of Human Rights, international human rights treaties, the Millennium Declaration and the 2005 World Summit Outcome.” Winifried Huck, *Measuring Sustainable Development Goals (SDGs) with indicators: is legitimacy lacking?*, in *The protection of general interests in contemporary international law: a theoretical and empirical inquiry* (M. Iovane, F. Palombino, D. Amoroso, G. Zarra, eds., forthcoming).

21. See STEPHEN BROWNE, *SUSTAINABLE DEVELOPMENT GOALS AND UN GOAL SETTING* 90–91 (2017).

Broader stakeholder involvement has also resulted in a proliferation of development metrics expressed through targets and indicators.²²

Importantly, for the purpose of the arguments made here, the SDGs also directly address this linkage between IP and development through SDG 9²³ with its accompanying targets and indicators. In addition to SDG 9, the SDGs encompass the production of numerous global public goods impacted or even driven by knowledge.²⁴ Ranging from “No Poverty” to “Peace, Justice, and Strong Institutions,”²⁵ the SDGs demand, whether implicitly or explicitly, that IP regulation be recast into global knowledge governance to manage the knowledge necessary to bring these goals to fruition.²⁶ These include knowledge governance activities, such as capacity-building, technological learning, and technology sharing for development across borders, which often go missing in traditional IP regulatory frameworks.²⁷

Thus, global knowledge governance undergirds many of the rest of the seventeen SDGs, which ambitiously address the topics of hunger, health, climate action, and clean water, among other areas.²⁸ A few of the targets and indicators explicitly link IP to its public law framework.²⁹ SDG Target 3b, for example, states:

Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for

22. *See id.* at 144-45.

23. 2030 Agenda, *supra* note 2, at Goal 9.

24. *See, e.g., id.* at Goals 2, 14, 17.

25. *Id.* at Goals 1, 16.

26. Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 6.

27. *Id.* at 5-6.

28. *See, e.g.,* 2030 Agenda, *supra* note 2, at Goals 2, 3, 6, 13.

29. *See id.* at Goals 3, 8, 10, 17.

all.³⁰

However, these linkages are not fully spelled out and are left for Member States and their partners to discern and implement. And at the same time that the SDGs clearly prioritize technological progress for development,³¹ the actual institutional mechanisms for achieving this or any other goal are still under-specified and not well understood.³²

The next sections examine key global knowledge governance activities through the trans-substantive categories of (1) Boundaries and Collaboration; (2) Innovation and Open-ness; and (3) Human Well-Being and Environmental Justice. Each of these three categories are analyzed from the perspective of institutional innovations in global knowledge governance frameworks. This brief tour highlights the efficacy of specific interventions, illustrated by case studies, and draws larger lessons for global knowledge governance and general knowledge system ordering.

II. IP AND DEVELOPMENT: BOUNDARIES AND COLLABORATION

Decisions regarding technology research and development (R&D), as well as what is often termed technology transfer,³³ are at the core of much of IP and development work. The insights of law and economics,

30. *Id.* at Goal 3.b.

31. *Goal 9: Industry, Innovation, Infrastructure*, U.N. SUSTAINABLE DEV. GOALS FUND, <http://www.sdgfund.org/goal-9-industry-innovation-infrastructure> (last accessed Apr. 17, 2019).

32. See generally Padmeshree Gehl Sampath, *Public-Private Partnerships and Technology Sharing: Existing Models and Future Institutional Designs*, in PPPs 333, 334–35 (Margaret Chon et al. eds., 2018) (noting that for “those trying to discuss and advocate solutions, it quickly became evident that the problem was not simply one of provision of drugs” as there was “a skewed distribution of innovation inputs [that] called for new mechanisms that could bridge the gap between private and public sectors”).

33. Joshua D. Sarnoff & Margaret Chon, *Innovation Law and Policy Choices for Climate Change-Related Public-Private Partnerships*, in PPPs 245, 253 (Margaret Chon et al. eds., 2018) (citing Stephen O. Andersen et al., *Technical Summary*, in *METHODOLOGICAL AND TECHNOLOGICAL ISSUES IN TECHNOLOGY TRANSFER: A SPECIAL REPORT OF IPCC WORKING GROUP III* 15–16 (2000)).

particularly Coasean economics,³⁴ inform much extant IP scholarship in the United States regarding these kinds of decisions. For example, Peter Lee has recently explained:

Coase's theory of the firm famously posited that transaction costs largely explain the emergence of vertically integrated firms. Where the transaction costs of market exchanges—including calculating prices, negotiating deals, and accounting for future uncertainty—exceed those of coordinating production within hierarchical firms, vertical integration will prevail.³⁵

These decisions include whether to “license in” or “license out” relevant technology protected by IP.³⁶

Global knowledge governance contends with many other institutional and organizational arrangements in addition to the quintessential Coasean stand-alone firm. Within knowledge economies, especially within IP-intensive industries, high uncertainty, risk, and cost are often associated with developing complex innovations, whether for industrialized or developing country sectors—thus collaborative partnerships between the public and private sectors may be a response to particular market failures, for example in the area of poverty-related neglected diseases (PRNDs).³⁷ Moreover, the public sector may lack sufficient resources to provide full support for innovation activities. Thus development-oriented partnerships may also address insufficient government capacity and support for the production and dissemination of public goods,³⁸ including many key innovation activities related to sustainable development. Additionally, global knowledge governance is driven by the growing participation of non-state actors, such as non-

34. See, e.g., Peter Lee, *Innovation and the Firm: A New Synthesis*, 70 STAN. L. REV. 1431, 1434–35, 1438 (2018).

35. *Id.* at 1438, 1440 n.24; see generally David J. Teece, *Profiting from Technological Innovation: Implications for Integrating, Collaboration, Licensing, and Public Policy*, 15 RES. POL'Y 285, 287 (1986) (providing an example of Coasean economics through the regimes of appropriability).

36. See Lee *supra* note 34, at 1440.

37. See Anatole Krattiger et al., *Driving Innovation for Global Health Through Multi-Stakeholder Partnerships*, in PPPs 47, 47 (Margaret Chon et al. eds., 2018).

38. See BRETT M. FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 53–55 (2012).

governmental organizations (NGOs) or non-profit organizations (NPOs), which may be primarily mission-driven rather than profit-driven.³⁹ These newer stakeholders encourage innovation activities and knowledge governance goals traditionally associated with the public sector and the public interest.⁴⁰ The increasingly complex nature of knowledge production and sharing means that diverse partners in global collaborative networks can be essential to productive cross-border innovation activities.

Global knowledge governance approaches must also grapple with many forms of knowledge outside of IP. The theory of the firm is a model that belies the complex landscape of global IP, which often involves networks of decision-making actors engaged in collaborative partnerships.⁴¹ Global knowledge governance can be characterized by vertical disintegration or other decentralized production models, such as networks.⁴² Relevant stakeholders of global IP systems include intergovernmental organizations (IGOs), NPOs, NGOs, and other organizations often driven by mission rather than profit considerations other than simple “make-buy” decisions involving IP-protected goods within vertically integrated firms motivates the actors in these complex networks.⁴³ Elaborate governance relationships, both internal and external to the collaborative partnerships within knowledge networks, can lead to different knowledge governance strategies by what has been termed “boundary organizations,” or organizations that can “accommodate the varying interests of parties by providing a mechanism that reinforces convergent interests while allowing divergent ones to persist.”⁴⁴ The interest convergence among multiple stakeholders within these boundary organizations not only involves

39. See Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 6.

40. See *id.*

41. Lee, *supra* note 34, at 1438.

42. *Id.* at 1442–43 (discussing various forms of vertical disintegration).

43. Cf. *id.* at 1438.

44. Siobhán O'Mahony & Beth A. Bechky, *Boundary Organizations: Enabling Collaboration Among Unexpected Allies*, 53 ADMIN. SCI. Q. 422, 426 (2008) (“[T]he concept of boundary organizations allows us to focus on the organizational mechanisms and processes that enable collaboration.”).

the transfer of IP-protected knowledge, but also critically important social relationships, tacit knowledge, and other knowledge dimensions.⁴⁵

The SDGs heavily emphasize institutional frameworks based upon collaborative partnerships.⁴⁶ In particular, SDG 17 proposes to “[s]trengthen the means of implementation and revitalize the global partnership for sustainable development.”⁴⁷ This seventeenth goal is viewed as a cross-cutting goal, which encourages partnerships as a primary, if not exclusive, approach towards implementation of the other sixteen goals.⁴⁸ These partnerships include public-private partnerships (PPPs) established for research and development, product development, and product distribution.⁴⁹ These kinds of PPPs are already prominent in the global fight against communicable diseases, which do not recognize borders.⁵⁰ Partnerships such as these could be described not only as boundary organizations, but also as “regime-straddling” because they cut across distinct development policy areas with their accompanying and typically siloed legal regimes, as well as across public and private sectors.⁵¹ Regime-straddling requires new and possibly out-of-the-box forms of governance disciplines and

45. Lee, *supra* note 34, at 1445–47 (discussing the importance of tacit knowledge transfer).

46. See, e.g., 2030 Agenda, *supra* note 2, at Goal 17 (“Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.”).

47. *Id.* (“Multi-stakeholder partnerships[:] 17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries; 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.”).

48. Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 9.

49. See, e.g., 2030 Agenda, *supra* note 2, at Goal 17.

50. Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 9.

51. *Id.*; cf. Laurence R. Helfer, *Regime-Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Law Making*, 29 YALE J. INT'L L. 1, 6 (2004).

mechanisms, whether through management choices in the private sector, or regulatory policies in the public sector.⁵²

One example of a boundary organization created specifically for IP and development is WIPO Re:Search.⁵³ Initiated by the World Intellectual Property Organization (WIPO) as a multi-stakeholder partnership for public health,⁵⁴ WIPO Re:Search operates in the context of broader innovation incentive schemes for PRNDs. This international non-governmental organization (INGO)-sponsored initiative involves a NPO partner, BIO Ventures for Global Health (BVGH),⁵⁵ which in turn leads the Pool for Open Innovation against Neglected Tropical Diseases in addition to WIPO Re:Search. As a partner, BVGH views itself as a hub.⁵⁶ It encourages and supports biopharmaceutical companies' contributions to PRND R&D through its organizational funding and efforts and organizes collaborative efforts among participating partner organizations.⁵⁷ This case study illustrates the importance of implementing a primary partner hub that manages established alliances to ensure that challenges are addressed and projects are successful. It is also crucial for the partners to establish governance principles regarding the sharing of IP among these organizations and spell out the consortium's alignment with the SDGs.

52. Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 10 ("This is very apparent in the global fight against communicable diseases, which did not recognize borders.").

53. Katy M. Graef et al., *Creating, Managing, and Advancing Collaborations: The Road to Successful Partnerships*, in PPPs 72, 74–75 (Margaret Chon et al. eds., 2018).

54. Krattiger et al., *Driving Innovation for Global Health Through Multi-Stakeholder Partnerships*, in PPPs *supra* note 1, at 47.

55. Graef et al., *Creating, Managing, and Advancing Collaborations: The Road to Successful Partnerships*, in PPPs, *supra* note 1, at 72.

56. See *About BVGH*, BVGH, <https://bvgh.org> (last visited Apr. 17, 2019) (noting that "BVGH connects people, resources, and ideas across biotechnology and pharmaceutical companies, governments, and nonprofits to solve global health issues").

57. See BIO VENTURES FOR GLOBAL HEALTH, BVGH, <https://bvgh.org/wp-content/uploads/2017/07/BVGH-Booklet-Brochure-2017.pdf> (last visited Apr. 17, 2019).

Another example of a boundary organization sponsored by WIPO is the Accessible Books Consortium (ABC), which promotes inclusive publishing.⁵⁸ Its purpose is to provide greater access to published materials to communities of visually impaired persons (VIP).⁵⁹ Stakeholders in the ABC include not only the sponsoring INGO, WIPO, but also NPO and NGO representatives of libraries, VIP communities, and for-profit publishers.⁶⁰ Many of the challenges faced by ABC's projects involve technological access and capacity-building for "accessible formats," which allow an eligible reader to have equivalent access to a as a person without a disability.⁶¹ WIPO ABC highlights critical lessons not only for collaborative networks engaged in knowledge governance for development, but also their relationship to existing public law frameworks. ABC is complementary to, rather than a substitute for, the Marrakesh Treaty to Facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities:

The Marrakesh Treaty aims to increase the number of published books in accessible formats designed for use by VIPs through copyright [limitations and exceptions] enacted into public legal frameworks. By contrast, the ABC's objective is to increase the number of books world-wide that are available for use by print-disabled people through licensing agreements between private parties. The approaches of the Marrakesh Treaty and the ABC may differ, but their aims remain similar. And arguably, both the Marrakesh Treaty and the ABC indirectly contribute towards Goal 4 of the

58. See Susan Isiko Štrba, *The Marrakesh Treaty, Public-Private Partnerships, and Access to Copyrighted Works by Visually Impaired Persons*, in PPPs 176, 176 (Margaret Chon et al. eds., 2018); see also Melissa Levine, *Intellectual Property and Public-Private Partner Motivations: Lessons from a Digital Library*, in PPPs 199, 212–17 (Margaret Chon et al. eds., 2018) (arguing that partnerships between libraries and the private sector cannot either form or function without an enabling environment of strong copyright exceptions and limitations at the national and multilateral copyright levels).

59. *Charter for Accessible Publishing*, ACCESSIBLE BOOKS CONSORTIUM, <https://www.accessiblebooksconsortium.org/portal/en/charter.html> (last visited Apr. 17, 2019).

60. *About Us*, ACCESSIBLE BOOKS CONSORTIUM, <https://www.accessiblebooksconsortium.org/about/en/> (last visited Apr. 17, 2019).

61. Catherine Jewell, *The Accessible Books Consortium: What It Means for Publishers*, WIPO MAG. (Feb. 2018), https://www.wipo.int/wipo_magazine/en/2018/01/article_0001.html.

SDGs, in which the international community aspires to “[e]nsure inclusive and equitable quality education and promote lifelong learning opportunities for all.”⁶²

Numerous other examples exist of WIPO-sponsored collaborative partnerships—or boundary organizations—that manage technology decisions within a knowledge governance framework by encouraging innovation, building innovation capacity, engaging in technology transfer, or otherwise ensuring dissemination and diffusion of the results of innovation across borders.⁶³ In each of these efforts by INGOs or national governments, it is critically important to calibrate the correct degree of public versus private control, orientation, and steering. Due to the diversity of partnerships for IP and development, this proportion necessarily varies from partnership to partnership, from country to country, and from domain to domain.⁶⁴

The SDGs emphasize that development is critical for so-called “developed” nations, not just for “developing” countries.⁶⁵ Thus consideration of knowledge governance within the United States or

62. Štrba, *The Marrakesh Treaty, Public-Private Partnerships, and Access to Copyrighted Works by Visually Impaired Persons*, in PPPs, *supra* note 1, at 177 (citing “Goal 4: Ensure Inclusive and Quality Education for all and Promote Lifelong Learning, UNITED NATIONS, <http://www.un.org/sustainabledevelopment/education/> (last visited Mar. 17, 2017)). Target 3 under this Goal is to “ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university” by 2030. *Id.* at 177 n.9.

63. See Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in PPPs, *supra* note 1, at 5–6; see also Ahmed Abdel-Latif, *The Rise of Public-Private Partnerships in Green Technologies and the Role of Intellectual Property Rights*, in PPPs 223, 223 (Margaret Chon et al. eds., 2018) (describing the WIPO Green initiative); Jens Bammel, *A Publisher Perspective on a PPP for Access to Biomedical Information*, in PPPs 143, 144 (Margaret Chon et al. eds., 2018) (describing the World Health Organization’s HINARI project); Sara Bannerman, *A Sustainable Development Agenda for the World Intellectual Property Organization: Networked Governance and Public-Private Partnerships*, in PPPs 157, 158 (Margaret Chon et al. eds., 2018) (describing the WIPO ARDI initiative).

64. Irene Calboli & Delphine Marie-Vivien, *One Size Does Not Fit All: The Roles of the State and the Private Sector in the Governing Framework of Geographical Indications*, in PPPs 308, 308 (Margaret Chon et al. eds., 2018).

65. 2030 Agenda, *supra* note 2, ¶ 5 (“These are universal goals and targets which involve the entire world, developed and developing countries alike.”).

other developed regions is relevant. Libraries are a key player in the dissemination of knowledge within knowledge governance frameworks.⁶⁶ One example is HathiTrust, involving a partnership between Google Books and a consortium of university libraries, spearheaded by a public university.⁶⁷ This highly technologically-intensive initiative demonstrates how libraries can further their non-profit mission to preserve and disseminate knowledge, better meet the informational needs implicit in the SDGs, and improve global access to knowledge and information with more clarity for both copyright holders and cultural institutions.⁶⁸

III. IP AND DEVELOPMENT: INNOVATION AND OPEN-NESS

Through SDG 17, partnerships are explicitly linked to the promise of greater innovation for sustainable development.⁶⁹ The potential of collaborative partnerships was arguably first apparent in the global health policy space, which had been highly polarized due to differential access to treatment for global communicable diseases such as HIV/AIDs.⁷⁰ Partners within public health-oriented partnerships are

66. *Features and Benefits*, HATHITRUST DIG. LIBR., https://www.hathitrust.org/features_benefits (last visited Apr. 17, 2019) (using HathiTrust as an example of an organization encouraging participation in “defining future directions of the shared library”).

67. Melissa Levine, *Intellectual Property and Public-Private Partner Motivations: Lessons from a Digital Library*, in PPPs, *supra* note 1, at 199 (reflecting on the “key motivations for this collaborative relationship between the [University of Michigan] Library as a cultural institution housed within a public research university serving multiple stakeholders and Google as a private corporation with a duty to its shareholders”).

68. *Mission and Goals*, HATHITRUST DIG. LIBR., https://www.hathitrust.org/mission_goals (last visited Apr. 17, 2019) (providing that “the mission of HathiTrust is to contribute to research, scholarship, and the common good by collaboratively collecting, preserving, communicating, and sharing the record of human knowledge”).

69. U.N. DEP'T OF ECON. & SOC. AFFAIRS, THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2018 30, U.N. Sales No. E.18.I.6 (2018), <https://unstats.un.org/sdgs/files/report/2018/TheSustainableDevelopmentGoalsReport2018-EN.pdf>.

70. Frederick M. Abbott, *Public-Private Partnerships as Models for New Drug Research and Development: The Future as Now*, in PPPs 29, 29 (Margaret Chon et al. eds., 2018).

in the position to act instrumentally through their deployment of tangible and intangible proprietary rights for non-commercial ends.⁷¹ These partners (often NGOs or NPOs) sometimes leverage IP for social mission either defensively (“to preclude commercial use of protected materials”) or offensively (“to promote non-commercial creative exchange and adaptation”), and “this is the essence of IP management in public-private partnerships.”⁷²

For example, the Innovative Medicines Initiative, Europe’s largest early-phase PPP, illustrates different ways in which IP is generated, protected, and managed within and beyond these types of research partnerships.⁷³ The participants can be classified as partnership-focused, open collaboration, or hybrid models.⁷⁴ Key issues are scrutinized, such as: the boundaries of the pre-competitive partnership, the role of trust, IP ownership and access rights (particularly with regard to foreground and background IP), the importance of transparent IP rules underlying knowledge sharing strategies, and the role of IP in performance.⁷⁵ This work also demonstrates the importance of acknowledging a broad range of IP performance measures related to knowledge sharing, including the sharing of knowhow, showhow, databases, and protocols—not simply patent-related metrics.

Although this case study illustrates that multi-stakeholder partnerships are not necessarily characterized either by complete open access or open sharing of knowledge, typically one of their main features is an expectation of knowledge sharing whether through

71. *Id.* at 30.

72. See Anthony Taubman, *A Typology of Intellectual Property Management for Public Health Innovation and Access: Design Considerations for Policymakers*, 4 OPEN AIDS J. 4, 9 (2010) (discussing open innovation, open source, commons-based peer production and distributed innovation in drug development in addition).

73. See, e.g., Hilde Stevens & Isabelle Huys, *Intellectual Property in Early-Phase Research: Public-Private Partnerships in the Biomedical Sector*, in PPPs 109, 109 (Margaret Chon et al. eds., 2018).

74. See *id.* at 111, 128-31 (discussing the variation in partnerships, ranging from more restricted IP Frameworks (partnership-focused) to open IP frameworks (open-collaboration)).

75. *Id.* at 129.

knowledge commons management, patent pooling, or other means.⁷⁶ The Medicines Patent Pool (MPP) is an example of a partnership based upon an explicit model of open-ness.⁷⁷ The MPP is the first patent pool in public health designed to enhance access to affordable medicines in developing countries through the negotiation of access-oriented and transparent voluntary licences with the pharmaceutical industry.⁷⁸ Although initially established to address the global epidemic of HIV R&D, it has subsequently expanded into Hepatitis C and Tuberculosis (TB) research.⁷⁹ The potential applicability of the MPP's patent pooling model to other pharmaceutical R&D areas, in the context of meeting the health-related SDGs, is an important question.⁸⁰

Outside of the medicines area, another example of an explicitly open partnership model is Open AIR, which characterizes itself as a cross-regional research platform.⁸¹ Open AIR has given rise to multiple examples of successful collaborative research across different development domains in the African continent. This networked platform consists of key operational elements relevant to addressing the development gap associated with IP, development, and knowledge governance.⁸² Its activities are primarily research-driven rather than product-driven.⁸³ Cross-sector partnerships in general can serve structurally as powerful sustainable development vehicles, perhaps especially when their goals are broader and longer-term than many development partnerships, which often have an ad hoc, interventionist outlook. Broader goals related to IP and development could include enabling entrepreneurship by small and medium enterprises, as well as encouraging rights in tradition.⁸⁴ This and the

76. *Id.* at 133-34.

77. Esteban Burrone, *Patent Pooling in Public Health*, in PPPs 93, 93 (Margaret Chon et al. eds., 2018).

78. *Id.*

79. *Id.*

80. *Id.*

81. Chidi Oguamanam & Jeremy de Beer, *Sustainable Development Through a Cross-Regional Research Partnership*, in PPPs 376, 376 (Margaret Chon et al. eds., 2018).

82. *Id.* at 376-77.

83. *Id.* at 390.

84. See, e.g., Jeremy de Beer et al., *Innovation, Intellectual Property and Development Narratives in Africa*, in INNOVATION AND INTELLECTUAL PROPERTY:

other examples show that global knowledge governance indeed can accommodate differing degrees of exclusivity and open-ness to promote development-related goals.

IV. IP AND DEVELOPMENT: HUMAN WELL-BEING AND ENVIRONMENTAL JUSTICE

The current SDGs and the earlier MDGs are based on development conceptualized as freedom.⁸⁵ Derived from Amartya Sen's famously entitled 1991 book *Development as Freedom*,⁸⁶ this approach to development (also known as human development, human flourishing, or the capabilities approach) is a powerful vehicle to incorporate equality norms into the regulation of knowledge goods.⁸⁷ Both the MDGs and the SDGs focus on certain objectives such as education, health, and other basic development goals essential to human flourishing.⁸⁸ The earlier experience with the MDGs⁸⁹ paved the path for the SDGs to encompass a much broader and certainly much more detailed set of activities related to human development, now combined with sustainable development. The end result of a long process of

COLLABORATIVE DYNAMICS IN AFRICA 16–17 (Jeremy de Beer et al. eds., 2014) (explaining the public-private partnerships throughout Africa between the agriculture sector and small to medium sized agriculture producers, working together to protect geographical indicators (GIs)); *see also* Margot Bagley, Presentation at the American University International Law Review Symposium on Intellectual Property and Development (Sept. 28, 2018).

85. AMARTYA SEN, *DEVELOPMENT AS FREEDOM* 36 (First Anchor Books ed. 2000).

86. *See generally id.* (viewing the expansion of freedom as both the primary end and the primary means of development).

87. *See id.* at 144 (explaining how creating social opportunities, such as healthcare, education, and social security, can contribute directly to quality of life).

88. *See, e.g.,* G.A. Res. 70/1, Transforming our World: The 2030 Agenda for Sustainable Development, U.N. Doc. A/Res/70/1, at preamble (2015) (“We are resolved to free the human race from tyranny of poverty and want and to heal and secure our planet.”); G.A. Res. 55/2, United Nations Millennium Declaration, U.N. Doc A/RES/55/2, ¶ 6 (2000) (providing “[m]en and women have the right to live their lives . . . Free from hunger and from the fear of violence, oppression or injustice”).

89. *See* David J. Maurrasse, *From the MDGs to the SDGs: Cross-Sector Partnerships as Avenues to Development in the U.N. System*, in PPPs 356, 364–71 (Margaret Chon et al. eds., 2018) (discussing the Millennium Development Goals Report 2015).

public consultation and participation is a surprisingly broad array of goals, targets, and indicators: seventeen current goals (as opposed to ten MDGs), 169 current targets (compared to eighteen, later expanded to twenty-one, under the MDGs) and 232 current indicators (compared to forty-eight, later expanded to sixty, under the MDGs).⁹⁰

These goals give global governance, including global knowledge governance, considerably more content, albeit in the language of goal-setting rather than norm-setting.⁹¹ The decisive turn towards goals, targets, and indicators as benchmarks of progress toward human and sustainable development in turn raises profound questions of measurement, monitoring, and evaluation of so-called global performance indicators.⁹² Unlike the human rights regime, the SDGs are not framed within the language of legal rights or duties, and the benchmarks for progress on the SDGs are accompanied by very few binding commitments, not to mention “specific responsibilities, obligations, or associated compliance mechanisms.”⁹³ At the same time, efforts to incorporate the SDGs into soft law commitments and even into treaty obligations are emerging.⁹⁴ These are early

90. MILLENNIUM DEVELOPMENT GOALS (MDGs), U.N., <https://millenniumindicators.un.org/unsd/mi/pdf/mdglist.pdf> (last visited Apr. 17, 2019); see generally U.N. Dep't of Econ. & Soc. Affairs, *Global Indicator Framework for the Sustainable Development Goals and Targets of the 2030 Agenda for Sustainable Development*, U.N. Doc. A/RES/71/313 (July 6, 2017) (explaining that while the total number of SDG indicators is 244, some of those are repeated under several targets); U.N. Dep't of Econ. & Soc. Affairs, *The Sustainable Development Goals Report 2017* (2017), <https://unstats.un.org/sdgs/files/report/2017/TheSustainableDevelopmentGoalsReport2017.pdf> (explaining the integrated, inclusive, and indivisible nature of the SDG indicators).

91. Kanie et al., *Introduction: Global Governance through Goal Setting*, in GOVERNING THROUGH GOALS: SUSTAINABLE DEVELOPMENT GOALS AS GOVERNANCE INNOVATION, *supra* note 19, at 1–2.

92. BROWNE, *supra* note 21, at 145; see generally Huck, *supra* note 20.

93. Kanie et al., *Introduction: Global Governance through Goal Setting*, in GOVERNING THROUGH GOALS: SUSTAINABLE DEVELOPMENT GOALS AS GOVERNANCE INNOVATION, *supra* note 19, at 18.; see Oran R. Young, *Conceptualization: Goal-Setting as a Strategy for Earth System Governance*, in GOVERNING THROUGH GOALS: SUSTAINABLE DEVELOPMENT GOALS AS GOVERNANCE INNOVATION 31, 35–37 (Norichika Kanie & Frank Biermann eds., 2017) (describing pitfalls of a goal-setting approach to governance).

94. See generally Winfried Huck & Claudia Kurkin, *The UN Sustainable Development Goals (SDGs) in the Transnational Multilevel System*, 2 HEIDELBERG

encouraging signs by certain states to honor commitments that are in principle shared by all states.

Some observers voice skepticism about the ability of the SDGs to overcome deepening structural inequalities both within and across countries.⁹⁵ However, the current reality is that the SDGs represent part of a shift in the approach to development and development assistance to emphasize greater private sector involvement (both non-profit and for-profit) and less reliance on overseas development assistance.⁹⁶ They are part of the trend in some countries that are shrinking the state and expanding the market.⁹⁷ This movement in turn has major implications for IP regimes, whether national and international, which provide the basic rules and flexibilities for the deployment of market-based IP rights.

These larger trends are also accompanied by a greater emphasis in the SDGs on state responsibility for ensuring the human rights and other structural pre-requisites for successful development.⁹⁸ SDG 16,

J. INT'L L. 375, 383-84 (2018) (explaining the practice in the United Nations of adopting General Assembly Resolutions with far-reaching, although only recommendary, international law obligations to give effect to the SDGs).

95. See Deborah S. Rogers & Balint Balazs, *The View from Deprivation: Poverty, Inequality and the Distribution of Wealth*, in POVERTY AND THE MILLENNIUM DEVELOPMENT GOALS: A CRITICAL LOOK FORWARD 45, 69-70 (Alberto D. Cimaradmore et al. eds., 2016) (questioning whether the SDGs are adequately designed to address inequality). But see Gillian MacNaughton, *Vertical Inequalities: Are the SDGs and Human Rights up to the Challenges?*, 21 INT'L J. HUM. RTS. 1050, 1056-57 (2017) (explaining that the SDGs incorporate more functional language aimed at addressing inequality and poverty alleviation compared to the MDGs, including language to address vertical inequalities like income, wealth, and social outcomes).

96. See, e.g., Jomo Kwame Sundaram et al., *Public-Private Partnerships and the 2030 Agenda for Sustainable Development: Fit for Purpose?* 6, 13, 15, 22 (U.N. Dep't of Econ. & Soc. Affairs, DESA Working Paper No. 148, ST/ESA/2016/DWP/148, 2016), https://www.un.org/esa/desa/papers/2016/wp148_2016.pdf (explaining that development aid might be better spent towards increasing host country institutional capacity to regulate IP protection, rather than the current trend of blended finance, which delivers aid directly to the private sector).

97. *Id.* at 1, 22.

98. See Langford, *supra* note 19, at 172 ("The SDGs thus recognize explicitly that progress on development will require internal and domestic institutional reform. By way of example, the target on enhanced foreign aid in Goal 17 is now preceded by a target on improved domestic tax and revenue collection. Legally, the human

for example, declares that states should “[p]romote peaceful and inclusive societies for sustainable development, provide access to justice for all[,] and build effective, accountable and inclusive institutions at all levels.”⁹⁹ This goal foregrounds the question of the kinds of knowledge governance policies that will contribute to this overall push towards just societies. As many IP scholars have argued elsewhere, the human rights and human development frameworks, among others, should guide global knowledge governance.¹⁰⁰

The incorporation of human rights into the SDGs is an advance from the previous MDGs, however, it also raises new challenges in implementation.¹⁰¹ The roles and responsibilities of IP-related

rights movement has demanded greater coherence between development policy and human rights treaties. This was acknowledged by states in the 2012 Rio Declaration, which set out the framework for drafting the agenda. The upshot is that international human rights law emerged as an important source of inspiration for new targets.”).

99. THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2018, *supra* note 69, at 12; see generally Ingo Keilitz, *The Trouble with Justice in the United Nations Sustainable Development Goals 2016-2030*, 7 WM. & MARY POL’Y REV. 1, 1 (2016) (discussing the inherent tension in Goal 16 between a lack of conceptual clarity on what is meant by “inclusive societies” and “inclusive and accountable institutions,” and how to translate those targets into meaningful development outcomes).

100. See, e.g., Aura Bertoni, *Research and “Development as Freedom” – Improving Democracy and Effectiveness in Pharmaceutical Innovation for Neglected Tropical Diseases*, 43 IIC: INT’L REV. INTEL. PROP. & COMPETITION L. 771 (2012) (arguing that intellectual property rights should not simply comply with human-rights obligations, but should be designed to attain the values underlying human rights); Laurence R. Helfer, *Toward a Human Rights Framework for Intellectual Property*, 40 U.C. DAVIS L. REV. 971 (2007) (recognizing the historic tension between human rights and intellectual property rights evident in both the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights, where the rights of authors and inventors are recognized as well as the right of the public to benefit from scientific and cultural advancements); J. Janewa Osei Tutu, *Human Development as a Core Objective of Global Intellectual Property*, 105 KY. L.J. 1 (2016) (advocating for the view that protecting human development should be a central objective of trade-based intellectual property law); Brett M. Frischmann, *Capabilities, Spillovers, and Intellectual Progress: Toward a Human Flourishing Theory for Intellectual Property* (Benjamin N. Cardozo Sch. of L., Faculty Res. Paper No. 442, 2014) (criticizing the prioritization of economic results over social ones, especially considering that the social benefits of human-focused IP protection may come in the form of “positive externalities,” which are usually more difficult to quantify than economic benefits).

101. See, e.g., Peter K. Yu, *Intellectual Property, Human Rights, and Public-*

partnerships in the international human rights regime includes incorporating the “protect, respect, and remedy” framework and the Guiding Principles on Business and Human Rights, which John Ruggie presented to the U.N. Human Rights Council in his capacity as the U.N. Secretary-General’s Special Representative on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises.¹⁰² Ruggie’s proposed framework and the Guiding Principles suggest that collaborative partnerships for development should assume greater human rights responsibilities.¹⁰³

With its roots in the environmental movement, the concept of sustainable development necessarily includes climate action¹⁰⁴ and other environmental-related concerns, including intergenerational justice.¹⁰⁵ The taxonomy of innovation policy choices within climate change-related technology transfer includes legal, public policy, management policy, and government funding choices.¹⁰⁶ Existing

Private Partnerships, in PPPs 398, 414-17 (Margaret Chon et al. eds., 2018) (discussing the varying human rights obligations arising in different forms of public-private partnerships).

102. See generally U.N. Special Representative of the Secretary-General, *Guiding Principles on Business and Human Rights: Implementing the United Nations “Protection, Respect and Remedy” Framework*, 6, U.N. Doc. A/HRC/17/31 (Mar. 21, 2011) (providing that the following general principles apply to States and private entities regarding human rights obligations in development: “(a) States’ existing obligations to respect, protect and fulfil human rights and fundamental freedoms; (b) The role of business enterprises as specialized organs of society performing specialized functions, required to comply with all applicable laws and to respect human rights; (c) The need for rights and obligations to be matched to appropriate and effective remedies when breached”).

103. *Id.* at 9-10.

104. *Sustainable Development Goal 13*, U.N. DEP’T ECON. & SOC. AFFAIRS, <https://sustainabledevelopment.un.org/sdg13> (last visited Apr. 17, 2019).

105. See Rep. of the World Comm’n on Env’t & Dev., *Our Common Future*, at 54, U.N. Doc. A/42/427, annex (Aug. 4, 1987) (defining sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”); Kanie et al., *Introduction: Global Governance Through Goal Setting*, in GOVERNING THROUGH GOALS: SUSTAINABLE DEVELOPMENT GOALS AS GOVERNANCE INNOVATION, *supra* note 19, at 8 (emphasizing a “much greater recognition of the interdependence of environmental, social and economic systems”).

106. Chon & Sarnoff, *Innovation Law and Policy Choices for Climate Change-Related Public-Private Partnerships*, in PPPs, *supra* note 1, at 245-47.

unequal patterns of creation and distribution of climate change technologies, and associated ownership of IP rights, pose significant challenges for specific policy choices in this development domain, including those aimed at overcoming access and price constraints. Both careful public sector policies and private sector (and governmental proprietary) choices, as well as greater public funding and more careful management of collaborative partnerships, are required to increase technology dissemination. More evaluation and monitoring of collaborative partnerships to ensure they are meeting stated goals will be critical in ensuring accountability, as well as measurable progress in their contribution to the SDGs' many goals and targets.¹⁰⁷

V. CONCLUSION

Recasting IP regulation into a global knowledge governance framework is illustrated by the case studies discussed here. The growing profile of partnerships in these governance arrangements can be attributed in part to the powerful need for linkages across different domains to effectuate development goals, and particularly innovation-related development goals, such as access to health and access to education. The examples discussed here also demonstrate how exploring beyond the doctrinal focus on either patent or copyright law alone can reveal important insights into the boundary and regime-straddling mechanisms driving IP and development.

IP and development-related collaborative partnerships are no longer narrowly confined to R&D of new technologies, nor to the development of national or local innovation capacities, nor even to technology transfer across borders.¹⁰⁸ These partnerships also directly and indirectly impact myriad areas involved in the production and delivery of many global public goods¹⁰⁹ crucial for human flourishing

107. Ayşem Mert & Philipp Pattberg, *How Do Climate Change and Energy-Related Partnerships Impact Innovation and Technology Transfer?: Some Lessons for the Implementation of the UN Sustainable Development Goals*, in PPPs 289, 289–91 (Margaret Chon et al. eds., 2018).

108. Chidi Oguamanam, *Open Innovation in Plant Genetic Resources for Food and Agriculture*, 13 CHICAGO-KENT J. INTELL. PROP. 11, 12, 14–15 (2013).

109. See generally Inge Kaul et al., *Introduction*, in GLOBAL PUBLIC GOODS:

and global sustainable development,¹¹⁰ such as agriculture and food security, climate change adaptation and mitigation, knowledge provision through ICTs, and public health through the widespread dissemination of pharmaceuticals and vaccines. Thus, collaborative partnerships involved in IP and development activities may address—while perhaps also simultaneously contribute to—the immense regulatory coordination issues inherent in the production and distribution of global public goods.

Global knowledge governance loosens the conceptual space of IP from the constraints of specific legal doctrines. This framing invites further consideration and exploration of emerging approaches, methodologies, and subjects of knowledge systems. Recasting IP and development to embrace the larger social welfare and social justice goals embedded with the SDGs can also result in significant analytical revisits to current IP doctrine. These are important “legal innovations”¹¹¹ in addition to other kinds of innovations. And as they are critical for successful implementation of the SDGs, this approach to IP and development can enhance production of key global public goods via the subsequent re-ordering and management of knowledge systems.

INTERNATIONAL COOPERATION IN THE 21ST CENTURY (Inge Kaul et al. eds., 1999) (discussing the effects of involving nonstate actors in the delivery of public goods); PROVIDING GLOBAL PUBLIC GOODS: MANAGING GLOBALIZATION (Inge Kaul et al. eds., 2003) (considering the implications of the growing involvement of private actors in the production of public goods, despite adequate norms governing such involvement).

110. See Chon & Sarnoff, *Innovation Law and Policy Choices for Climate Change-Related Public-Private Partnerships*, in PPPs, *supra* note 1, at 245–47.

111. See Ruth Okediji, *Legal Innovation in International Intellectual Property Relations: Revisiting Twenty-One Years of the TRIPS Agreement*, 36 U. PA. J. INT’L L. 191 (2015) (discussing how new techniques, institutions, or methods are specifically designed in light of WTO and TRIPS obligations to facilitate implementation of those obligations in a manner consistent with or that reconciles national welfare goals as the primary justification for IP protection. Across developed and developing countries, legal innovation offers a fine instrument for defining sovereign responsibility for the effects of IP rights in society); *see generally* INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT: STRATEGIES TO OPTIMIZE ECONOMIC DEVELOPMENT IN A TRIPS-PLUS ERA (Daniel Gervais ed., 2d ed. 2014) (discussing the gradual adoption and leveraging of IP protection by developing countries and how IP can be used in achieve human rights objectives).